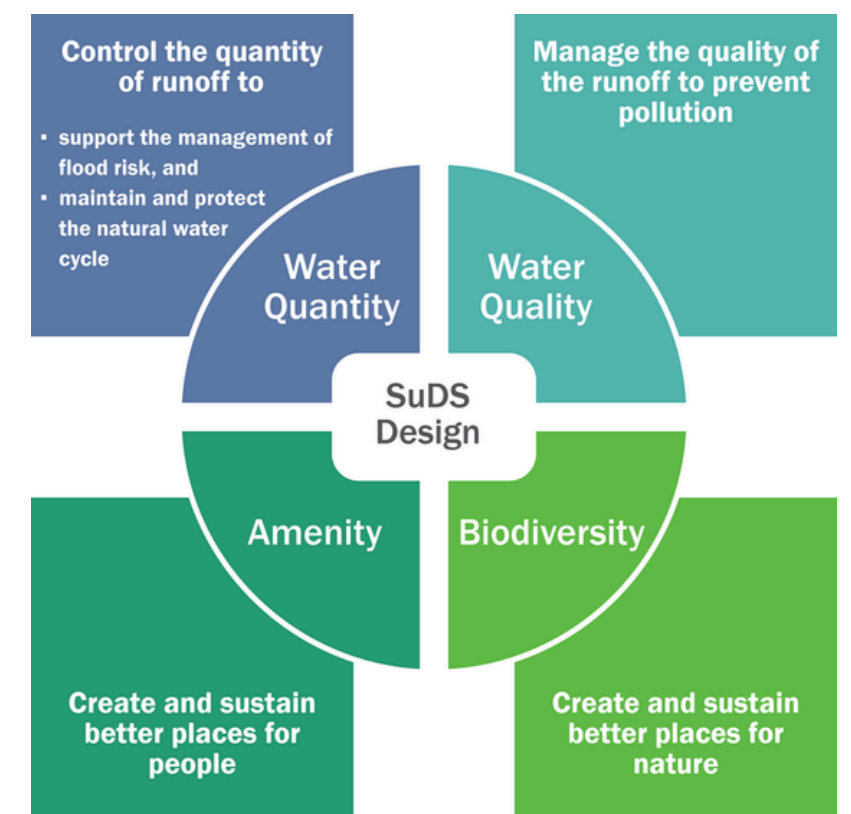


SuDS at Worlingham Primary School

What are SuDS?

Sustainable Drainage Systems (SuDS) are a type of surface water drainage that provide many benefits. These benefits include capturing surface water to reuse and reduce flood risk, provide amenity and biodiversity benefits to the local environment. They can be provided above and below ground, often uniquely designed for each site.

The benefits provided by SuDS are referred to as the 4 pillars of SuDS design and are summarised in the image on the right.

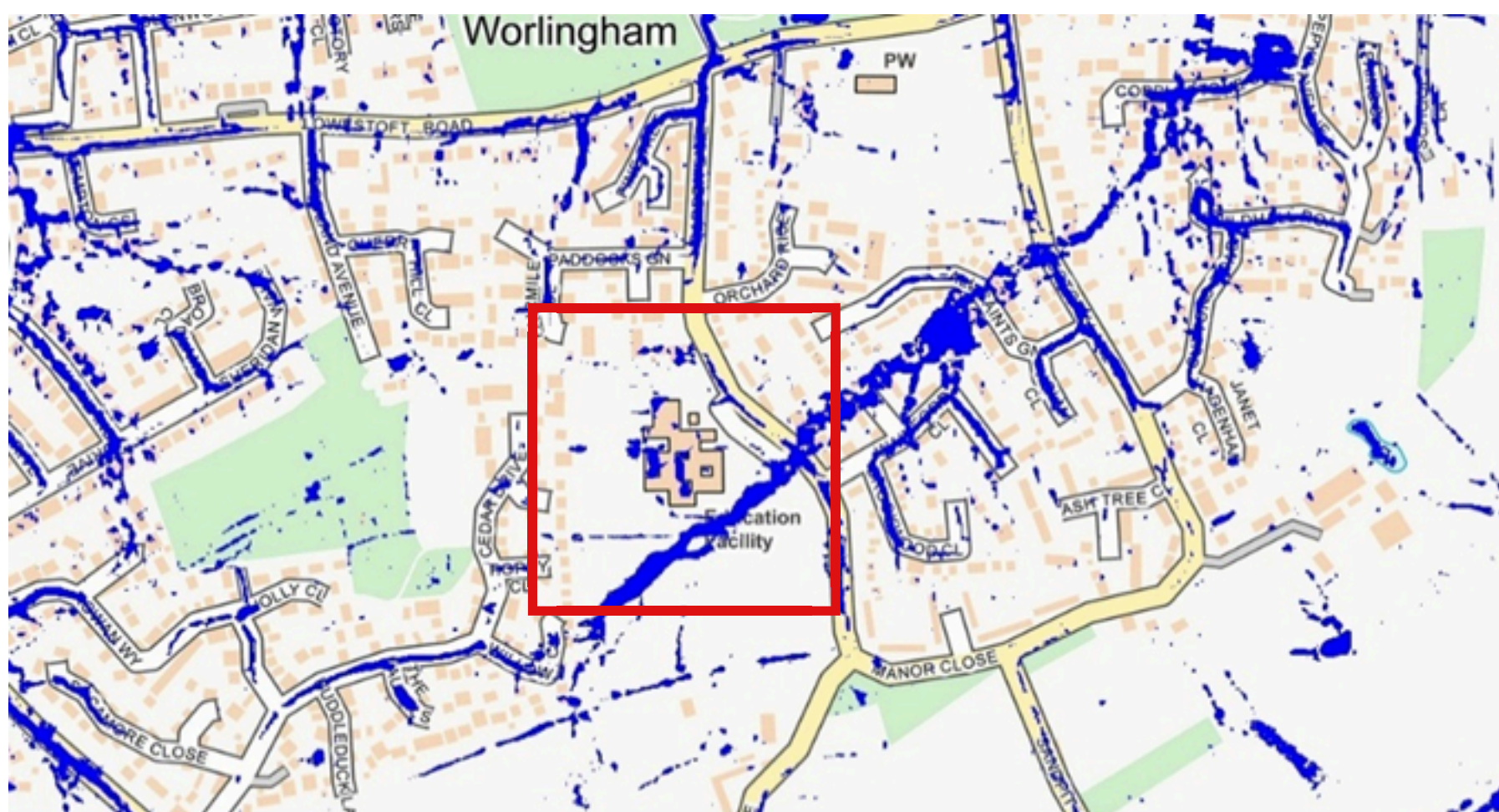


Why Worlingham primary school?

Worlingham parish has experienced several flooding events in the past. A surface water management plan was developed using hydraulic modelling to establish where surface water flooding is most likely to occur. It was found that the natural topography of the area creates surface water flow paths across the village, with one running south-west to north-east across the primary school site (see map below). This also impacts Worlingham homes further north-east of the school, with no measures to slow down surface water across the school site. This has encouraged the use of infiltration using SUDS.

In addition, heavy rainfall causes significant issues for the school, making the field unusable for up to half the year. In contrast, the school's wildlife pond, located in the south-west corner of the playing field, experiences low water levels through the summer. This requires top ups from piped mains water.

This created an opportunity to remove the need for a piped water supply to maintain the pond level by replacing it with stored surface water drained from the playing field. Overall, this would maintain the pond water level, with the collected surface water from the field, and enable the use of the playing field all year round. In addition, re-purposing an open courtyard has provided an opportunity for using collected rainwater to sustain new gardening educational elements, encouraging students to be more involved in what is occurring in their school and their wider community.



The figure above shows a surface water flow map. Highlighted in dark blue are the main routes water takes in this area. As you can see, the school is affected by a major flow path on the field, as well as within the courtyard area.

Benefits to students and the community:

- Benefits properties around the school who are at flood risk
- Reduction of downstream flood risk
- Surface water has been repurposed
- Gained vital land back
- Educating students
- Awareness of the issue

Who have we worked with?

- Anglian Water
- Department for Education
- Worlingham CEVC primary school
- Greener Growth

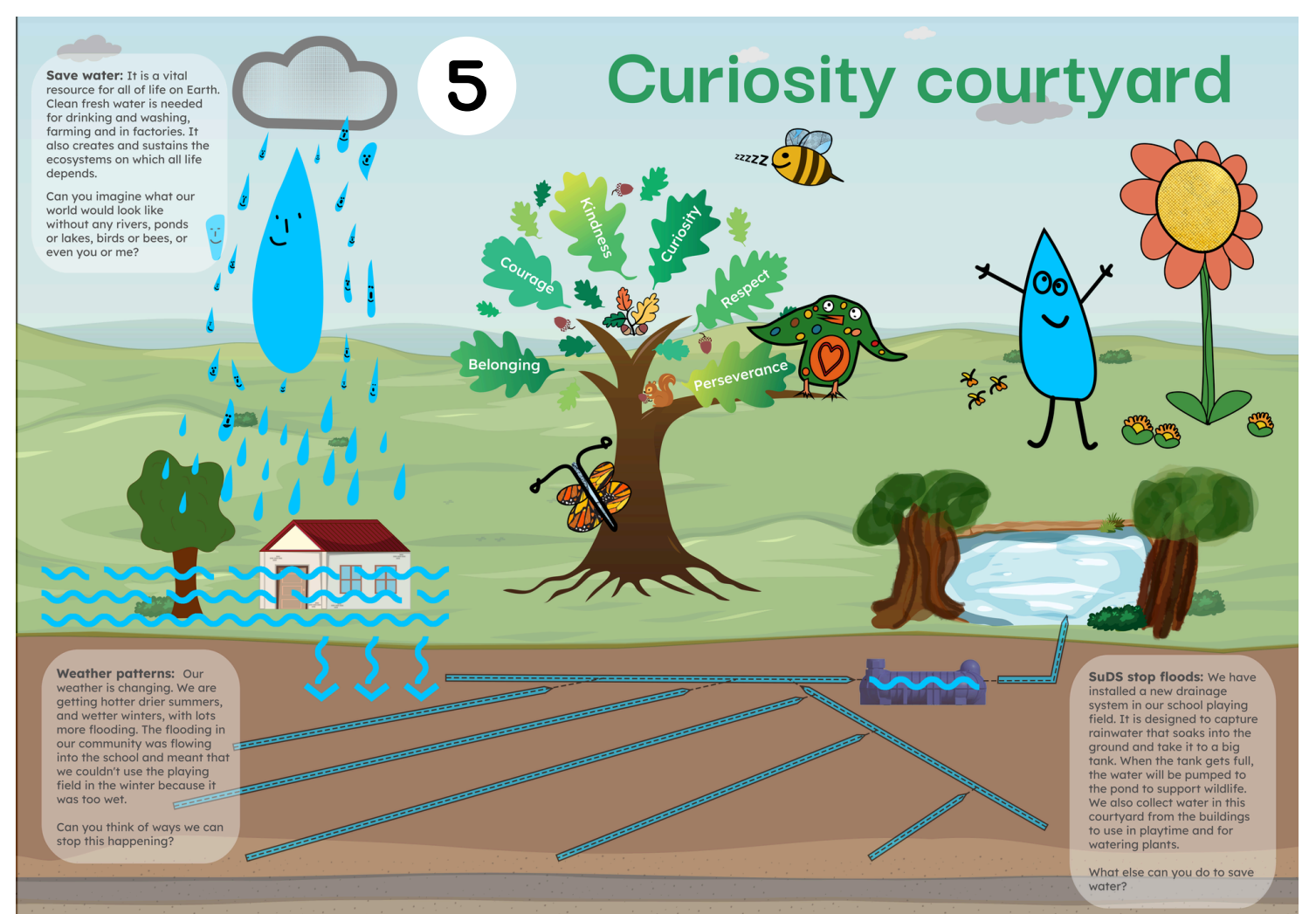
What have we done?

Curiosity Courtyard

Although this area of the school was not an area of high flood risk, there were some surface water which could be utilised, alongside the development of an educational resource. The 'curiosity courtyard', is named to reflect one of the school's values, has been designed with interactive components for students to play and discover the journey of water and the role of SuDS in the changing environment.

This has included creating a rain garden (1), a water pump and drum (1), planters and benches (2), a water flow table, water butts (3), a water channel (4) and a mural (5). By revamping the playhouse and adding water butts to capture rainwater off of the roof, this can be reused to water the new gardens. Students will be taught how repurposing surface water is beneficial and actively interact with the features and learn the flow of water.

The school plans to use the space for interactive lessons about SuDS, the water cycle and water based science. Greener Growth offered lessons during its construction on the water cycle and students drawings from these were used to illustrate the water cycle set out in the mural. This is displayed in the courtyard as a permanent reminder of all elements of the project.



Mural designed by students at the school.

Memorial Garden

The installation of the playing field land drainage resulted on an excess of soil to be disposed of. Working with the school SENCO staff an additional element to the project was developed to create a natural outdoors seating space. This developed into what is now the school's memorial garden, repurposing the soil to create the seating bunds and wildflower planted areas whilst minimising additional costs of soil disposal. The school has benefitted from the creation of another play and learning place.

Students can sit and play in this area at break and lunch time enjoying a quiet space and the field all year round. This area adds to the amenity of the school making it more inviting to reflect and learn with the additional planting area.



New Bunds created for outdoor lessons and seating

Playing field and Wildlife Pond

As this area is within the flood flow path, it was not surprising to hear from the Primary school that for up to half of the year the school field could be boggy and unusable. In addition, over the summer the pond wildlife area could struggle to maintain water levels requiring extra water to be pumped in from the school mains. Installing the 10,000lt storage tank supplied by laid network of land drainage under the field has meant instead of the field becoming waterlogged, it is drained and stored in the tank to be pumped via a new underground pipe into the pond during the summer. This has brought both the playing field and the pond into all year use.

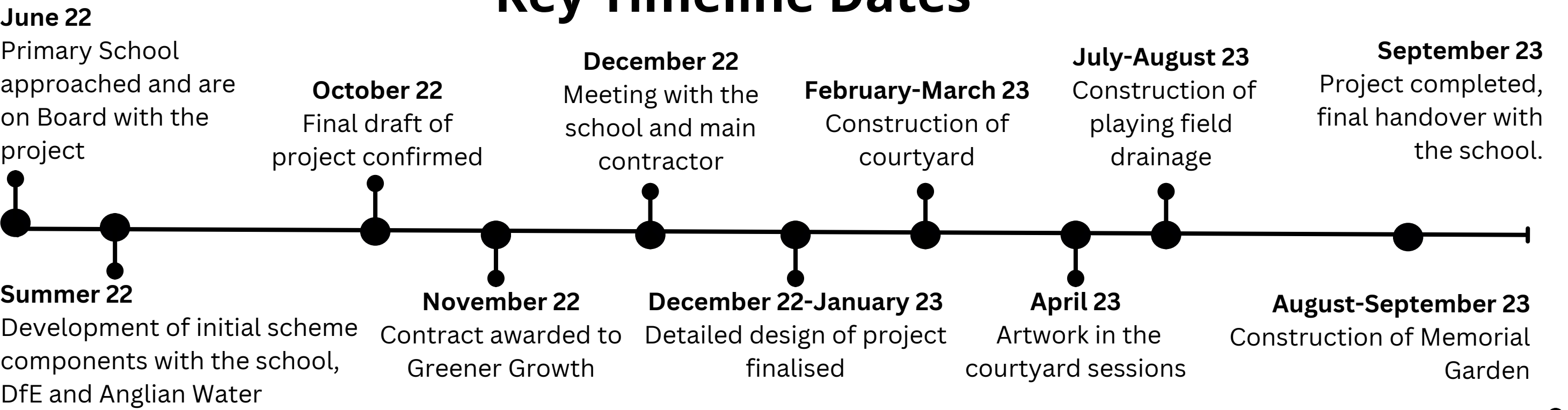


Schools pond area



Underground water storage tank before installation

Key Timeline Dates



What has it cost?	Cost (exc. VAT)	Content
Courtyard	£10,945	4 water butts Clearance of main garden area and conversion to rain garden 3 planters and benches Stream water table Hand water pump Water science/dam table Refurbished Wendy house Labour costs
Playing Field	£41,685	Pump & pipe to pond Land drains for 750m 10,000ltr underground tank Electricity supply & control panel 3 years maintenance & spare pump Labour & Machinery costs
Memorial Garden	£8,422	Supply 30 tonnes of topsoil Supply of wildflower and grass seed Machinery hire Labour costs Mural
Total	£61,052	Funding: £25,000 from Department for Education £25,000 from Anglian Water £11,052 from Suffolk County Council